



PATENT APPLICATION

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re application of: :  
Shoichiro Yasunami et al. : Group Art Unit: 1752  
Appln. No.: 10/791,559 : Examiner: LE, HOA VAN  
Filed: March 3, 2004 :  
For: POSITIVE WORKING RESIST COMPOSITION

DECLARATION UNDER 37 C.F.R. §1.132

Assistant Commissioner for Patents  
Washington, D.C. 20231

Sir:

I, Shoichiro Yasunami, do declare and state as follows:

I am a citizen of Japan.

I graduated from Kyusyu University, Faculty of Engineering, Course of Materials Synthesis in March 1981.

Since April 1981 I have been employed by Fuji Photo Film Co., Ltd. and since June 1998 I have been engaged in research and development of photoresist for semiconductors at the Yoshida-Minami Factory Research Division of the company.

I am a co-inventor of the invention described and claimed in the above-named application, and I am familiar with the subject matter disclosed by the application as well as the Office Action dated August 22, 2005 concerning the application.

In order to demonstrate the unexpected superiority of the present invention, the following experimentation was conducted by me or under my

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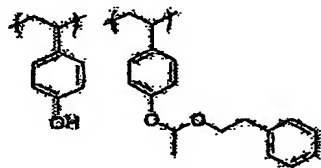
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supervision.

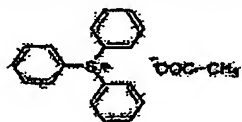
### EXPERIMENTATION

The composition preparation, coating, pattern formation and evaluation were carried out in the same manner as in Example 1 of the specification as filed, except for using each of resin A, sulfonic acid generator (PAG-A), carboxylic acid generator (D-1) and nitrogen-containing basic compound (E-1) shown in Table A below. Resin A and PAG-A are resin c-28 and acid generator (II-4) used in Example No. 6 of Uenishi et al., respectively. The evaluation results are shown in Table B below.

Resin A (used in Example No. 6 of Uenishi et al.)



D-1 (carboxylic acid generator)



E-1: Tri-n-hexylamine

PAG-A (sulfonic acid generator used in Example No. 6 of Uenishi et al.)



Table A

Example No.	Resin	Sulfonic acid generator	Carboxylic acid generator	Nitrogen-containing basic compound	Remarks
1	Resin A	PAG-A (4wt%)	-	E-1 (0.3wt%)	Comparative Example 1
2	Resin A	PAG-A (4wt%)	D-1 (0.4wt%)	E-1 (0.3wt%)	Comparative Example 2
3	Resin A	PAG-A (7wt%)	D-1 (0.4wt%)	E-1 (0.3wt%)	Example 1
4	Resin A	PAG-A (11wt%)	D-1 (0.4wt%)	E-1 (0.3wt%)	Example 2

Table B

Example No.	Sensitivity ( $\mu\text{C}/\text{cm}^2$ )	Resolution ( $\mu\text{m}$ )	Pattern shape 3-Grade evaluation	Line edge roughness (nm)
1	8.0	0.15	Taper	12.0
2	8.5	0.10	Slightly taper	6.5
3	5.5	0.09	Rectangular	5.2
4	4.0	0.09	Rectangular	4.6

As clearly seen from Tables, Example 1 and 2 of the present invention using carboxylic acid generator along with 7wt% or more of sulfonic acid generator are excellent in each of sensitivity, resolution, pattern shape and line edge roughness as compared with Comparative Example 1 and 2.

I declare further that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under §1001 of Title 18 of the United States Code and that such willful false statements may jeopardize the validity of the application or any patent issuing

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thereon.

Respectively submitted,

Date: 10/18/05

Shoichiro Yasunami

Shoichiro Yasunami